DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

IN REPLYING, ADDRESS THE

Communicable Disease Center
Enteric Bacteriology Laboratories
P. O. Box 185
Chamblee, Georgia

January 4, 1956

Dr. J. Lederberg
Department of Genetics
The University of Wisconsin
Madison 6, Wisconsin

Dear Dr. Lederberg:

Your b,i-e,n,x results are very interesting but somewhat confusing to one who knows nothing of genetics. I presume you are familiar with the sucrose fermentating 6,8: d,i forms and 4,12; d,e,h strains from lizards. The latter can be split into distinct d; e,h; and e,n,z_{15} phases. Also, recently two Salmonella types have appeared which have r,i in phase 1. Your results may have some bearing on the occurrence of r,i phases.

I am having some experience with O-5 antigen that is weakening my previously expressed convictions. This concerns a suspected carrier in the recent Lancaster, Pennsylvania outbreak of S. paratyphi B from whom (if the records are correct) have been isolated eight cultures which are 4,12 nonmotile and one 4,5,12: b-1,2 form, the latter being identical with blood cultures from patients. All belong to the same phage type. I started to bundle all the nonmotiles up and send them to you to mobilize, then thought that was too much of an imposition and am attempting it myself. I want to see if the mobilized cultures will show O-5. I plan to use PLT22 cultivated on S. dublin.

In re efficiency of phase variation in N25 and N97 - I was thinking of phase variation (i.e readily transformable phases as in the usual culture of S. paratyphi B) as a unit character which might be transduced, just as motility and antigens are transferred. If phase variation is due to a given combination of genes, then N25 and N97 are lacking one of the factors necessary for ready conversion from one phase to the other. My thought was that this factor could be introduced by the systems suggested. Am I completely off base here?

With kind regards, I am

For the Officer-in-Charge, Bacteriology Section

Sincerely yours,

Phil

Philip R. Edwards, Ph. D.
Bacteriologist-in-Charge
Enteric Bacteriology Unit

See attached sheet
for postscript

P. S.

I believe I misinterpreted one paragraph in your letter. It was my opinion that it would necessarily require a double hit to change a nonmotile S. paratyphi B to 4,5,12: i, thus putting the likelihood of such a change at 10^{-12} or 10^{-10}. Right or wrong? I hope you will someday have an opportunity to work with the phages I sent you. Either our methods, the phages, or the bugs were inefficient.